Technical Accomplishment

Aviation Safety Program

LEWICE V2.2

POC: Mary Wadel, PI: Mark Potapczuk, GRC Date Completed: June 2002

Relevant Milestone: Release of computational 2D ice accretion code; LEWICE V2.2 (APP LI Milestone, 3rd Quarter 2002)

Shown: LEWICE 2.2 thermal ice protection system analysis results compared to experiment. The system being analyzed is an electro-thermal ice protection system specifically created to provide data for software validation.

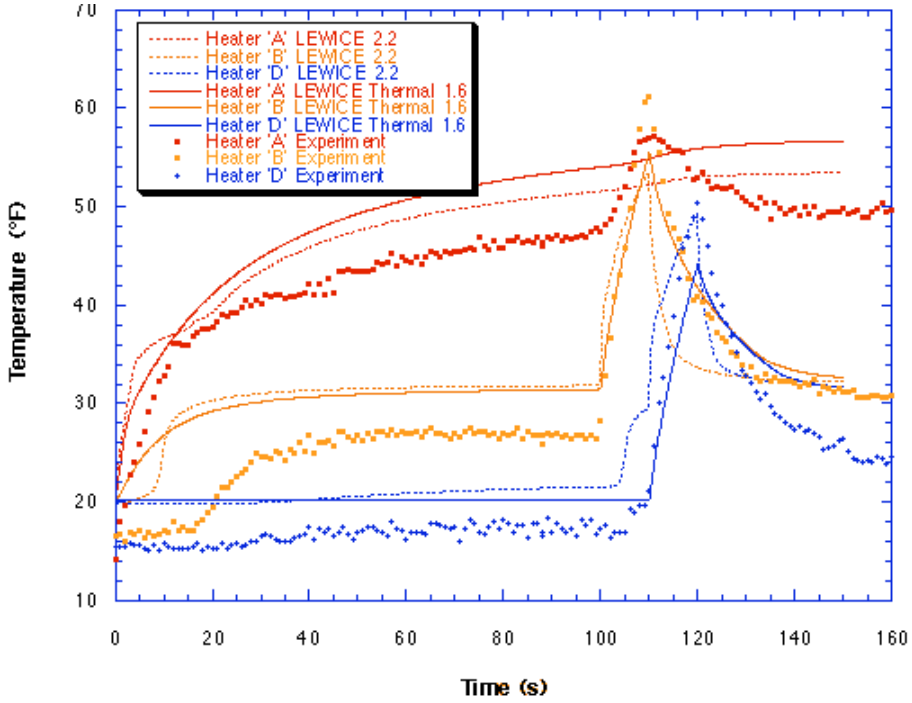
Accomplishment/Relation to Milestone and ETO: The LEWICE ice accretion computational tool has been enhanced by the addition of thermal ice protection subroutines for modeling hot air and electro-thermal anti/de-icing systems. This systems analysis capability advances the state-of-art to allow manufacturers to determine, prior to testing, whether their ice protection system design will prevent ice formation or remove existing ice accumulations. Delivery of this software will assist manufacturers and OEMs in design and certification.

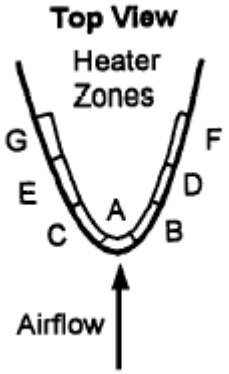
Future Plans: LEWICE will be enhanced to include the ability to use a grid based flow code input. This will include the introduction of an automatically updated grid to allow for the growth of ice as a function of time which will more readily allow the use of Euler and Navier-Stokes flow solutions.

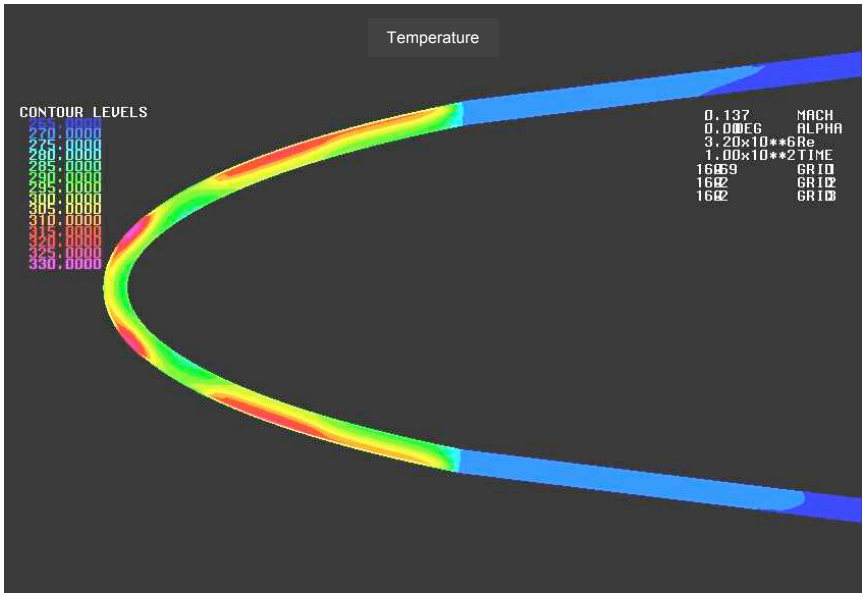
LEWICE V2.2

Aviation Safety Program

Comparison of LEWICE 2.2 Thermal Ice Protection System Simulation to Experiment







NASA Glenn Research Center
LEWICE
VERSION 2.2